

Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables: 2002

Issued September 2004

EC02-311-334513

2002 Economic Census

Manufacturing

Industry Series



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U.S. Department of Commerce
Economics and Statistics Administration
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-- Not applicable for this report.

Table 1. Historical Statistics for the Industry: 2002 and Earlier Years

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry and year ¹	Com- panies ²	All estab- lish- ments ³	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
			Number ⁴	Payroll (\$1,000)	Number ⁴	Hours (1,000)	Wages (\$1,000)				
334513, Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables											
2002..	905	986	40 328	1 845 132	18 542	36 442	623 856	4 418 772	2 726 997	7 204 910	227 931
2001..	N	N	42 979	1 936 305	18 692	37 404	644 750	4 558 078	2 776 347	7 376 604	158 065
2000..	N	N	44 155	1 945 662	19 623	39 110	653 423	4 801 589	2 947 971	7 715 544	174 821
1999..	N	N	45 887	1 959 555	20 387	40 711	657 704	4 581 307	2 892 955	7 482 846	219 806
1998..	N	N	46 957	2 013 993	22 015	42 715	690 384	4 761 813	2 858 579	7 621 243	305 734
1997..	919	995	48 237	1 958 046	21 312	41 233	618 958	4 914 894	2 728 231	7 662 564	208 434

¹Statistics presented for years ending in 2 and 7 are census data. Interim census years are derived in a representative sample of manufacturing establishments canvassed in the Annual Survey of Manufactures (ASM).

²For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

³Includes establishments with payroll at any time during the year.

⁴Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 2. Industry Statistics for Selected States: 2002

[States that are a disclosure or with less than 100 employees are not shown. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographical definitions, see note at end of table. For information on geographic areas followed by *, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E ¹	All establishments ²		All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number ³	Payroll (\$1,000)	Number ³	Hours (1,000)	Wages (\$1,000)				
334513, Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables												
United States.....	1	986	359	40 328	1 845 132	18 542	36 442	623 856	4 418 772	2 726 997	7 204 910	227 931
Arizona.....	—	14	3	442	19 907	267	538	9 667	71 630	105 897	175 584	1 961
California.....	2	172	60	5 255	253 757	2 466	4 940	89 164	584 532	321 992	923 340	39 396
Colorado.....	—	24	7	977	53 525	339	722	13 057	165 284	59 334	225 252	9 051
Connecticut.....	—	40	17	2 343	116 744	1 113	2 241	40 792	244 425	175 256	415 153	8 164
Florida.....	1	24	9	553	21 911	283	548	7 928	53 279	33 719	87 542	2 546
Georgia.....	—	21	6	1 202	50 697	641	1 235	16 140	120 743	116 580	238 498	8 789
Illinois.....	1	40	17	1 659	74 498	748	1 450	24 693	159 004	103 899	267 090	5 417
Indiana.....	—	18	8	637	22 879	407	841	10 550	62 185	35 811	98 691	1 026
Iowa.....	—	8	3	418	19 029	67	126	2 402	121 582	26 931	148 977	798
Kentucky.....	—	8	1	274	9 276	223	424	6 776	19 362	5 299	25 222	219
Louisiana.....	—	13	5	321	13 498	176	388	6 472	33 514	17 057	50 891	878
Maryland.....	3	10	3	188	8 920	82	141	2 101	18 574	9 239	27 851	636
Massachusetts.....	—	40	25	4 387	205 021	1 910	3 306	60 731	495 754	268 459	784 189	15 275
Michigan.....	1	46	18	1 261	58 182	603	1 081	21 337	146 567	76 934	225 301	7 349
Minnesota.....	—	30	11	2 223	101 984	907	1 808	39 086	266 860	128 157	396 834	19 072
Missouri.....	2	15	7	564	24 443	352	653	9 792	53 673	34 129	88 253	1 794
Nevada.....	9	9	3	174	8 295	87	169	2 828	21 257	10 560	31 828	1 294
New Hampshire.....	9	14	2	122	5 490	54	102	1 615	10 773	5 673	16 406	690
New Jersey.....	4	34	10	766	39 166	447	965	20 206	90 903	48 874	142 617	10 223
New York.....	1	35	16	1 262	60 245	551	1 138	16 917	154 201	82 827	235 736	4 000
North Carolina.....	5	21	4	211	8 257	108	235	3 028	15 158	8 491	23 704	736
Ohio.....	—	56	23	2 913	144 440	1 004	2 058	38 819	341 502	164 767	508 818	19 426
Oklahoma.....	5	10	4	828	34 800	293	556	9 253	46 592	75 708	122 791	3 486
Pennsylvania.....	—	61	26	4 357	191 996	1 792	3 461	60 577	429 233	315 760	752 402	27 823
South Carolina.....	2	6	3	132	5 828	59	121	1 717	16 454	7 835	24 323	543
Tennessee.....	1	13	6	645	24 378	459	856	12 685	51 160	33 296	84 514	1 393
Texas.....	2	89	33	3 457	149 738	1 646	3 415	52 709	362 755	274 119	641 662	24 958
Virginia.....	3	17	5	405	16 456	213	427	6 102	50 195	19 476	69 315	1 114
Washington.....	3	16	4	179	8 543	77	149	2 421	17 284	10 251	27 518	824
West Virginia.....	2	3	2	294	13 919	153	311	3 697	34 732	15 911	49 970	947
Wisconsin.....	—	23	6	665	27 307	387	732	10 347	48 366	73 826	123 456	1 682

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

Table 3. Detailed Statistics by Industry: 2002

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Item	Value
334513, Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables	
Companies ¹	905
All establishments ²	986
Establishments with 1 to 19 employees	627
Establishments with 20 to 99 employees	263
Establishments with 100 employees or more	96
All employees ³	40 328
Total compensation	2 246 702
Annual payroll	1 845 132
Total fringe benefits	401 570
Production workers, average for year	18 542
Production workers on March 12	18 731
Production workers on May 12	18 688
Production workers on August 12	18 434
Production workers on November 12	18 247
Production worker hours	36 442
Production worker wages	623 856
Total cost of materials	2 726 997
Materials, parts, containers, packaging, etc., used	2 322 453
Resales	285 793
Purchased fuels	6 819
Purchased electricity	38 891
Contract work	73 041
Quantity of electricity purchased for heat and power	561 666
Quantity of electricity generated less sold for heat and power	S
Total value of shipments	7 204 910
Primary products value of shipments	6 134 858
Secondary products value of shipments	457 383
Total miscellaneous receipts	612 669
Value of resales	464 391
Contract receipts	22 401
Other miscellaneous receipts	125 877
Primary products specialization ratio	93
Value of primary products shipments made in all industries	6 965 328
Value of primary products shipments made in this industry	6 134 858
Value of primary products shipments made in other industries	830 470
Coverage ratio	88
Value added	4 418 772
Total inventories, beginning of year	1 224 205
Finished goods inventories	297 635
Work-in-process inventories	266 679
Materials and supplies inventories	659 891
Total inventories, end of year	1 210 511
Finished goods inventories	281 417
Work-in-process inventories	223 756
Materials and supplies inventories	705 338
Gross value of depreciable assets (acquisition costs) at beginning of year	2 062 437
Total capital expenditures (new and used)	227 931
Buildings and other structures (new and used)	36 740
Machinery and equipment (new and used)	191 191
Automobiles, trucks, etc., for highway use	9 887
Computers and peripheral data processing equipment	34 620
All other expenditures for machinery and equipment	146 684
Total retirements	155 379
Gross value of depreciable assets at end of year	2 134 989
Depreciation charges during year	178 956
Total rental payments	114 510
Buildings and other structures	78 394
Machinery and equipment	36 116
Total other expenses ⁴	686 038
Response coverage ratio ⁵	76
Repair and maintenance services of buildings and/or machinery ⁴	29 461
Communications services ⁴	26 720
Legal services ⁴	24 792
Accounting, auditing, and bookkeeping services ⁴	8 707
Advertising and promotional services ⁴	39 899
Expensed computer hardware and supplies and purchased computer services ⁴	15 386
Refuse removal (including hazardous waste) services ⁴	3 448
Management consulting and administrative services ⁴	25 313
Taxes and license fees ⁴	14 721
All other expenses ⁴	497 590

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

⁴Based on Annual Survey of Manufactures (ASM) sample data.

⁵A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those Annual Survey of Manufactures (ASM) establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note 1: The amounts shown for other expenses reflect only those services that establishments purchase from other companies.

Note 2: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 4. Industry Statistics by Employment Size: 2002

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Employment size class	E ¹	All establishments ²	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number ³	Payroll (\$1,000)	Number ³	Hours (1,000)	Wages (\$1,000)				
334513, Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables											
All establishments	1	986	40 328	1 845 132	18 542	36 442	623 856	4 418 772	2 726 997	7 204 910	227 931
Establishments with—											
1 to 4 employees	9	368	744	30 739	417	706	10 809	71 033	39 318	110 717	5 785
5 to 9 employees	7	131	853	40 929	378	780	12 625	91 923	54 486	146 530	5 636
10 to 19 employees	4	128	1 820	84 543	810	1 584	26 249	179 668	96 369	276 371	7 785
20 to 49 employees	3	157	5 132	239 577	2 346	4 520	75 591	524 014	342 108	873 368	25 989
50 to 99 employees	1	106	7 341	338 523	3 598	7 093	113 730	763 568	455 992	1 224 300	38 342
100 to 249 employees	1	64	9 871	439 858	4 930	10 025	168 067	1 124 276	639 697	1 777 026	61 112
250 to 499 employees	—	24	7 943	355 292	3 877	7 589	128 351	943 550	697 892	1 656 783	37 417
500 to 999 employees	—	6	h	D	D	D	D	D	D	D	D
1,000 to 2,499 employees	—	2	h	D	D	D	D	D	D	D	D
2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—
Administrative records ⁴	9	439	1 634	71 534	887	1 676	25 630	172 136	89 545	258 733	11 348

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

⁴Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 5. Industry Statistics by Primary Product Class Specialization: 2002

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry or product class code	Industry or primary product class	All establishments ¹	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number ²	Payroll (\$1,000)	Number ²	Hours (1,000)	Wages (\$1,000)				
334513	Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables.....	986	40 328	1 845 132	18 542	36 442	623 856	4 418 772	2 726 997	7 204 910	227 931
3345130	Process control instruments	986	40 328	1 845 132	18 542	36 442	623 856	4 418 772	2 726 997	7 204 910	227 931

¹Includes establishments with payroll at any time during the year.

²Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 6a. **Products Statistics: 2002 and 1997**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Product code	Product	Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)
334513	Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables	2002.. N	X	X	6 965 328
	.....1997.. N		X	X	7 234 887
3345130	Process control instruments	2002.. N	X	X	6 965 328
	.....1997.. N		X	X	7 234 887
33451301	Process control instruments	2002.. N	X	X	6 268 416
	.....1997.. N		X	X	6 581 435
3345130100	Process control instruments ¹	2002.. 452	X	X	6 268 416
	.....1997.. 512		X	X	6 581 435
3345130Y	Process control instruments, nsk, total	2002.. N	X	X	696 912
	.....1997.. N		X	X	653 452
3345130YWW	Process control instruments, nsk, for nonadministrative-record establishments	2002.. N	X	X	467 205
	.....1997.. N		X	X	367 470
3345130YWY	Process control instruments, nsk, for administrative-record establishments	2002.. N	X	X	229 707
	.....1997.. N		X	X	285 982

¹For additional detail, see Current Industrial Report MA334B, Selected Instruments and Related Products.

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p-10 to 19 percent estimated; q-20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 6b. **Product Class Shipments for Selected States: 2002 and 1997**

[Not applicable for this report.]

Table 7. Materials Consumed by Kind: 2002 and 1997

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Material code	Material consumed	Quantity	Delivered cost (\$1,000)
334513	Instruments and related products manufacturing for measuring, displaying, and controlling industrial process variables		
00900001	Total materials	X	2 322 453
33441200	Printed circuit boards (without inserted components) for electronic circuitry	X	2 366 394
001900C4	Printed circuit assemblies, loaded boards, and modules (printed circuit boards with inserted electronic components)	X	56 048
	.....2002..	X	103 326
	.....1997..	X	126 106
33441300	Semiconductors (including transistors, diodes, rectifiers, and integrated circuits), for electronic circuitry	X	168 987
33441400	Capacitors for electronic circuitry	X	35 881
33441500	Resistors for electronic circuitry	X	128 250
	.....2002..	X	8 240
	.....1997..	X	22 765
001900D3	All other miscellaneous components and accessories, for electronic circuitry (excluding tubes)	X	D
33593101	Current-carrying wiring devices	X	98 826
001900B1	Electrical transmission, distribution, and control equipment	X	D
	.....2002..	X	102 272
	.....1997..	X	25 871
33411001	Electronic computer equipment	X	24 159
33451501	Electrical instrument mechanisms and meter movements (including instrument relays)	X	54 867
33451503	All other miscellaneous electrical measuring instruments and parts	X	71 823
	.....2002..	X	34 676
	.....1997..	X	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	X	23 675
32610007	Fabricated plastics products (excluding gaskets, hoses, and belting)	X	24 106
332000A9	Sheet metal products (excluding stampings)	X	75 411
	.....2002..	X	68 789
	.....1997..	X	14 372
332000AC	Metal stampings	X	5 608
332000AE	Other fabricated metal products (excluding forgings)	X	28 836
33210000	Forgings	X	39 259
	.....2002..	X	41 494
	.....1997..	X	49 195
33100035	Castings, rough and semifinished	X	24 794
33100033	Metal shapes and forms (excluding castings, forgings, and fabricated metal products)	X	57 093
33120001	Steel shapes and forms (excluding castings, forgings, and fabricated metal products)	X	97 703
	.....2002..	X	79 852
	.....1997..	X	10 270
33100038	Aluminum and aluminum-base alloy shapes and forms (excluding castings, forgings, and fabricated metal products)	X	N
33100076	Other nonferrous shapes and forms (excluding castings, forgings, and fabricated metal products)	X	57 961
33142111	Copper and copper-base alloy shapes and forms (excluding castings, forgings, and fabricated metal products)	X	86 336
	.....2002..	X	26 090
	.....1997..	X	54 698
32720003	Glass and glass products (excluding windows and mirrors)	X	65 104
331000A7	Insulated wire and cable (including magnet wire)	X	N
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products	X	10 426
	.....2002..	X	10 568
	.....1997..	X	16 911
33331401	Optical instruments and lenses (excluding sighting, tracking, and fire control)	X	N
33422001	Electronic communication equipment	X	N
33531211	Fractional horsepower electric motors (less than 1 hp)	X	4 073
	.....2002..	X	N
	.....1997..	X	N
33441900	Liquid crystal display screens (LCD), including LED	X	24 677
32220017	Paper and paperboard containers (including shipping sacks and other paper packaging supplies)	X	N
00970099	All other materials and components, parts, containers, and supplies	X	18 505
00971000	Materials, ingredients, containers, and supplies, nsk	X	N
	.....2002..	X	379 593
	.....1997..	X	453 714
	.....2002..	X	877 254
	.....1997..	X	716 768

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p-10 to 19 percent estimated; q-20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.